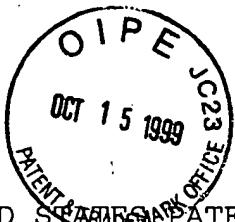


IN THE UNITED STATES PATENT & TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS



GP 1732
X

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JCH
10-2289

In Re Patent Application of :
DALE E. POLK, JR. :
Serial No.: 08/993,516 : Art Unit 1732
Filed: 12/1897 : Examiner D. Lee
For: **THERMOPLASTIC MOLDING PROCESS** :
AND APPARATUS :
:

U.S. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

SIR:

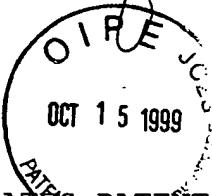
I am enclosing herewith an original and two copies of the **Brief of Appellants** for the subject identified patent application. Also enclosed is a check for the brief fee of \$150.00.

Respectfully submitted,

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BRIEF OF APPELLANTS

This is an appeal from the Examiner of Art Unit 1732 refusing claims 1, 2, 3, 4, 6, and 7. The claims on appeal are set forth in the Appendix.

1. Real Party in Interest

The real party in interest is the Applicant, Dale E. Polk, Jr.

2. Related appeals and interferences

There are no related appeals or interferences.

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3. Status of Claims:

Claims 1 is rejected under 35 U.S.C 103 in view of Okumura et al (5,500,170) in view of Knopf (4,517,145). Claims 2 - 4 are rejected under 35 U.S.C 103 in view of Okumura et al in view of Knopf and further in view of Murayama et al (4,776,782). Non-elected Claims 8 - 13 were the subject of a restriction requirement.

4. Status of Amendments

A proposed amendment after final rejection has been entered upon the filing of an appeal to overcome the 35 U.S.C. 112 rejection.

5. Summary of the Invention:

A thermoplastic molding process is provided having the steps of selecting a thermoplastic extrusion die (30) for the extrusion of a thermoplastic slab and having a plurality of adjustable die gate members (35) for varying the thickness of the extruded material in different parts of the extruded slab and a trimmer (17) for cutting the extruded thermoplastic slab from the thermoplastic extrusion die (16, 30). The thermoplastic extrusion die (16, 30) varies the thickness of the extruded material passing therethrough in different parts of the

extruded slab to produce a slab having many different thicknesses aligned to make a part of variable thickness. The thermoplastic material is heated to a fluid state and extruded through the selected thermoplastic die (16, 30) which has been adjusted for the varying thicknesses in different parts of the extruded slab and trimmed to size. Each trimmed slab of heated thermoplastic material is fed directly onto a thermoforming mold (19, 23) while still in a heated state to mold a predetermined part having a variable thickness in predetermined portions thereof from the heated slab of material. A plurality of thermoplastic molds (19, 23), either vacuum or compression molds, are each mounted on a movable platform (21), such as a rotating platform, for moving one mold at a time into a position to receive the heated thermoplastic slab being trimmed from the thermoplastic extrusion die (16, 30). A molded part is formed with a variable thickness from a heated slab of thermoplastic material being fed still heated from the extrusion die (16, 30). A plurality of molds (19, 23) are mounted to a platform to feed one mold into a loading position for receiving a thermoplastic slab from the extrusion die (16, 30) and a second mold into a release position for removing the formed part from the mold.

6. Issues

The issue presented as to claims 1 - 4, 6 and 7 is whether these claims meet the requirement of patentability under 35 U.S.C. 103.

7. Grouping of Claims

Claims 1 - 4, 6, and 7 form one group of claims for a thermoplastic molding process rejected under 35 U.S.C. 103. The rejected claims, however, do not stand or fall together and the arguments set forth herein present reasons as to why Appellant considers the rejected claims to be separately patentable.

8. Arguments

All of the claims of this case stand finally rejected under 35 U.S.C. 103 on combinations formed using the Okumura, et al. patent with the Knopf patent, as to claim 1, and with Murayama et al. as to the remaining claims.

The principal reference to Okumura et al. shows a heating and extruding method for a bulk preform of a fiber reinforced composite material which combines a stabbing machine for forming a hole in a bulk preform and a heating machine connected to the stabbing machine for heating the bulk preform by a nitrogen gas and an extruding machine connected to the heating machine for

heating and compressing the bulk preform heated by the heating machine to discharge a predetermined amount of the bulk preform. An extruding lip of the extruding machine has a thickness restriction plate and a width restriction plate for adjusting the extrusion thickness and width of the melted composite material. The Okumura patent has a single adjustable device for adjusting plastic thickness. This design does not allow gates to be side-by-side to allow for thickness control. The patent does not indicate how the plastic form gets to the mold. This is important to be able to make the thickness change in the plastic lay-down.

In the present invention, speed and position controls allow accurate positioning of the mold under the extrusion die. As the mold travels under the die, the choreography of die gate changes, carriage speed changes, and extruder speed adjustments of the system controller produces a heated slab of the desired variable thickness trimmed to size to be laid into the mold as desired. This limits the natural flow of the resin resulting in a greater control of the thickness. Okumura on the other hand does not provide a plurality of adjustable die gate plates placed adjacent to each other and separately adjustable nor does it adjust the thermoplastic extrusion die plurality of adjustable die gates for varying the thickness of the extruded material passing thereto in different parts of the extruded slab

to thereby vary the thickness across the thermoplastic material being extruded, as set forth in claim 1. Since obviousness determination under 35 USC 103 must include consideration of invention as whole, including its structure, its properties, and problem it solves, and thus unobviousness of structure for its intended purpose is relevant to obviousness determination In re Wright, 6USPQ2d, 1959, 1988.

The Murayama et al. patent is for a rotational plastic compression molding apparatus which includes a plurality of circumferentially spaced female molds and a plurality of circumferentially spaced male molds cooperating respectively with the plurality of female molds. The female molds and the male molds are rotated in synchronism and moved around successive material loading zones, compression molding zones, and article discharge zones. This patent only teaches a way to position the molds for compression after loading the mold. Neither the Okumura nor the Murayama patents teach use of a moveable carriage for loading the molds with the still heated thermoplastic or use of multiple gates for producing a preformed slab of variable thickness which is deposited into a compression mold for making a molded product having predetermined variable thicknesses in the product.

The Knopf patent is an extrusion die employing proximity sensors to directly measure the actual die gap (of a single die

with no gates) during extrusion and uses manual and automatic closed-loop methods of operation. Knopf provides a plurality of inner flow surfaces of a single die in opposed relationship to each other to define the die gap and means for adjustment of the relationship of the inner flow surfaces to each other for controlling minor changes in an extrusion die to produce an even flow of material out of the extrusion die.

This contrasts with the present invention which uses a plurality of die gates to produce an uneven flow of material and to make large changes in flow up to and including complete shutdown of the material from the die at any one or more gates to make for a non-rectangular lay-down pattern. Knopf uses molded plastic introduced into a die through an inlet (20) by a pump and extrudes a sheet-like or film form through a die gap created by a pair of die lips (13A) and (13B). Adjustment bolts (10) control the die gap by pulling the flexible die lip (13A) away from or towards the rigid die lip (13B) by adjustment of bolts 10. Knopf provides a method of controlling the melt thickness distribution which has a flexible die lip for extruding a plastic melt through an adjustable extrusion by flexing the die lip at one point. Knopf also measures the die gap when the plastic is flowing through the die with a proximity sensor for making adjustments for maintaining the plastic passing through the gap uniform. It is only fundamental that a

valid reference is good for what it discloses and must show all or part of the invention for which a patent is sought, In re Stempel, Jr., 113 U.S.P.O. 77 (CCPA 1977). These prior references do not show the present invention as claimed.

The references do not teach the invention as set forth in claim 1 having a plurality of adjustable die gates placed adjacent to each other which are separately adjustable to vary the thickness of the extruded material passing therethrough. It would also be unobvious to combine the Okumura et al., Murayama et al., and Knopf patents without a complete redesign of the machines, which redesign would be unobvious to a person of ordinary skill. There would be no way to modify the Okumura et al. patent to add a plurality of side-by-side separately adjustable gates to vary the thickness of the extrusion with a gas web thickness control. That is, the present invention provides for multiple side-by-side full closing die gates that allow production of a non-rectangular lay-down pattern which needs no preforms. The resins are in-line blended to negate the need for an inert atmosphere, as set forth in the Okumura et al. patent. The moving carriage also carries a mold under the die allowing the slab of material to fall into the mold, stress-free, with the precisely set amount of material in the proper place for making a variable thickness molded object. Any combination of these references, each of which teach something

different from that disclosed and claimed in the present application, would not teach the present invention. It would be unobvious to selectively pick different components from each patent to produce a thermoplastic molding process in accordance with the present invention. References may not be combined indiscriminately and it must be determined whether the prior art suggests doing what Applicant is doing, In re Shaffer, 108 U.S.P.Q. 326. Where nothing in the prior art suggests to one of ordinary skill in the art the desirability of combining the features shown in the different references, the claims should be held to be allowable, In re Osweiler, 145 U.S.P.Q. 691 (CCPA 1965). It would require a total redesign of the separate patent references in order to combine them and there is no reason or teaching reference to suggest the combining of a single die with a flexible lip of Knopf to the Okumura et al. die which already adjust the thickness of the slab. The flexible lip cannot be added to the gate of Okumura et al since Knopf has the entire die integrated for making the adjustments which would not fit on the end of a movable gate.

These patents are each performing something different from each other and different from the present invention. The dependent claims further provide for a thermoplastic molding process including the step of moving the thermoforming mold having a molded part therein while the mold is cooling in claim

2. Claim 3 includes the step of moving a second thermoforming mold in position for receiving the next trimmed still hot thermoplastic slab which is not taught by any of the prior patents and which would be unobvious to a person of ordinary skill when combined with a variable thickness extrusion die for a mold in order to make a molded part having different thicknesses throughout the product. Claim 4 rotates the molds on a table between positions and is not taught by the references in a combination which aligns a variable thickness slab with a mold set out in the claims from which it depends. Claim 6 includes in the step of selecting a die, the selecting of a die in which each of the plurality of gates is attached to a motor allowing each gate plate to be adjusted remotely to vary the position of the plates separately and during the extrusion of each slot not taught by the cited references. Claim 7 has each motor being an electric stepper motor also not used in the prior references as combined with the claims from which it depends. The present dependent claims form a patentable combination which would be unobvious to a person of ordinary skill in the art, especially in the absence of a teaching reference. It is well settled that a claimed combination may be patentable whether it is composed of elements all new, partly new or all old. Rosemount, Inc. v. Beckman Instruments, Inc., 727 F.2d 1540, 221 USPQ 1, 7 (Fed. Cir. 1984). This is because the prior art must

contain some teaching, suggestion or incentive to combine the individually known elements or features in such a manner as to result in the claimed invention. Carella v. Starlight Archery, 804 F.2d 135, 231 USPQ 644, 647 (Fed.Cir.1986).

The prior art does not teach the invention as claimed and there is no teaching reference or suggestion to combine the references and it would be unobvious to combine the references without Applicant's disclosure. None of the references look like or work like Applicant's process. The combining of the Okumura et al. and Knopf patents, both of which teach the extrusion of a piece of material of uniform thickness, and the Murayama et al. patent would be unobvious to a person of ordinary skill in the art and any such combination still would not teach either the method or the apparatus of the claimed invention. Any combination of the references is no more than a hindsight reconstruction and still would not teach the elements of the claims. The combining of the reference patents would require a total redesign of the patents in view of Applicant's disclosure and any attempted piecemeal and hindsight re-construction of the claim is not permissible in rejecting a claim, In re Rothermal, et al 125 U.S.P.O. 328 (CCPA 1960). There is no reason nor any way shown by the Examiner to combine a flexible lip die of Knopf with an extrusion method for bulk preform having a single adjustable gate both of which are solely

for producing a uniform thickness of extruded material which is just the opposite of the present invention. The patent examiner bears the burden of establishing a *prima facie* case of obviousness when rejecting claims under 35 U.S.C. 103. The mere fact that the reference cited by the examiner may be modified does not allow the examiner to meet his or her burden absent a suggestion in the cited art of the desirability of the modification. In re Fritch, 23 U.S.P.Q. 2d 1780 (Fed. Cir. 1992).

9. An Appendix containing a copy of each of the claims appealed is attached hereto.

Conclusion

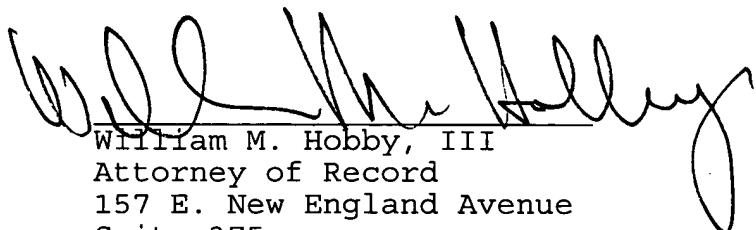
Applicant submits that all of the appealed claims in this application are patentable under 35 U.S.C. 103 and a reversal of the Examiner is believed to be in order.

This Brief and Appendix are enclosed in triplicate.

Fee

This application is on behalf of a small entity and a fee of \$ 150.00 is enclosed herewith.

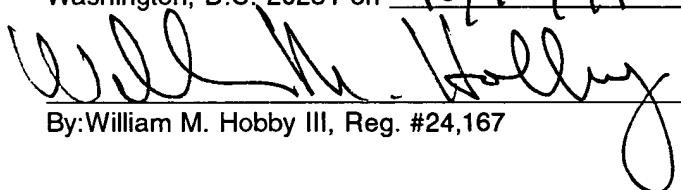
Respectfully submitted,



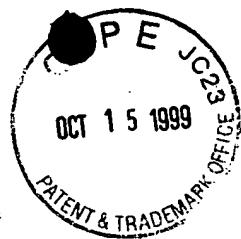
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I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 on 10/12/99.



By: William M. Hobby III, Reg. #24,167



CLAIMS APPENDIX

1. A thermoplastic molding process comprising the steps of:

selecting a thermoplastic extrusion die for extruding a slab of thermoplastic material, said extrusion die having a plurality of adjustable die gates therein placed adjacent to each other and separately adjustable for varying the thickness of the extruding material in different parts of the extruded slab;

adjusting the thermoplastic extrusion die plurality of adjustable die gates for varying thickness of the extruded material passing therethrough in different parts of the extruded slab to thereby vary the thickness across the thermoplastic materials being extruded;

heating a thermoplastic material to a fluid;

extruding a slab of said fluid thermoplastic material through said selected and adjusted thermoplastic extrusion die gates;

trimming said extruded thermoplastic slab having a variable thickness to a predetermined size;

placing said trimmed slab of heated thermoplastic material into a thermoforming mold; and

molding a predetermined thermoformed part in said mold, whereby a molded part is formed with a variable thickness from a slab of material heated during extrusion of the material.

2. A thermoplastic molding process in accordance with claim 1 including the step of moving said thermoforming mold having a molded part therein while said mold is cooling.

3. A thermoplastic molding process in accordance with claim 2 including the step of moving a second thermoforming mold in position for receiving the next trimmed thermoplastic slab.

4. A thermoplastic molding process in accordance with claim 3 including the step of rotating a plurality of thermoplastic molds on a table to position one mold at a time in a position to receive the next trimmed thermoplastic slab.

6. A thermoplastic molding process in accordance with claim 1 in which the step of selecting a die includes selecting a die in which each of said plurality of gates is attached to a motor allowing ^{each} said gate to be moved remotely to vary the position of each gate separately.

7. A thermoplastic molding process in accordance with claim 6 in which each said motor is an electric stepper motor.